SPACE DEBRIS SYMPOSIUM (A6)
Space Debris Removal Concepts (6)

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OHB CONCEPTS FOR ACTIVE SPACE DEBRIS REMOVAL AND ON-ORBIT SERVICING

Abstract

Having recognized the importance of active debris removal and the promising future business of on-orbit servicing, OHB System is currently working on the whole range of technology- and system related issues necessary to address these intertwined topics.

In doing, so, OHB System draws on a long heritage of national, international and commercial developments of technologies and missions. On the technology side, OHB System's Munich site (previously Kayser-Threde) was involved in the ROKVISS mission to qualify robotic arm joints onboard the ISS. For vision-based navigation, the VIBANASS system has been developed and tested. OHB System has further been responsible for the robotic payload of SMART-OLEV. Regarding mission development, in DEOS Phase B, OHB System was responsible for the study lead and for the rendezvous docking payload. In phase B2, OHB System developed the target spacecraft and the docking mechanism. In ESA's study of a service-oriented approach to ADR (ADRS), both mission concepts and business models were studied.

Regarding more recent and ongoing activities, the system aspects of space debris removal have been studied by OHB System in the e.Deorbit mission phase A, which was completed in early 2015. In this context, a mission for the removal of very large space debris objects has been studied and successfully brought beyond PRR level. To further study the challenging capture tools required, a specific study on novel tentacle-based clamping mechanisms has been performed. Additionally, an internally funded RD project has been kicked off in cooperation with DLR to develop key elements of the robotic manipulators. Finally, the servicing aspect of refueling is being studied in the ASSIST project including the design, manufacturing and test of a breadboard for the refueling adapter.

This paper presents a comprehensive summary of OHB System's current on-orbit servicing and active debris removal activities, including key results and status of all ongoing mission and technology development projects.

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